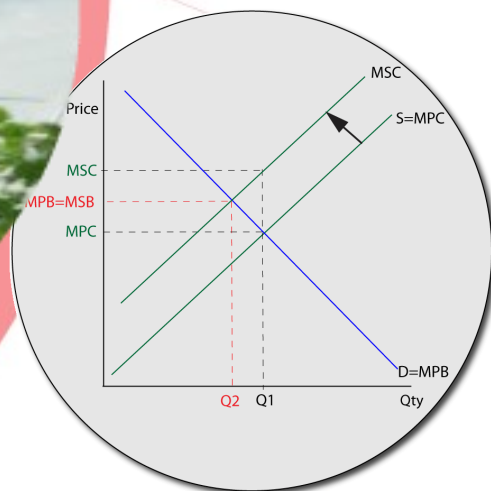
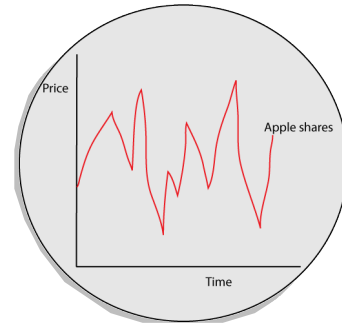


# Unit 1—Microeconomics

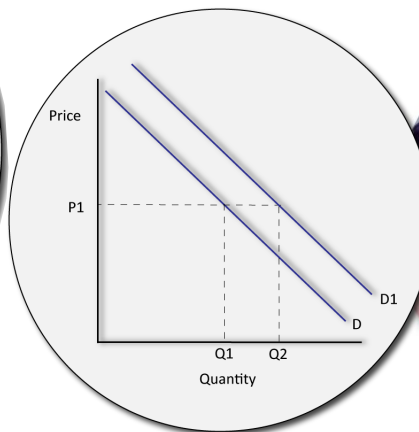
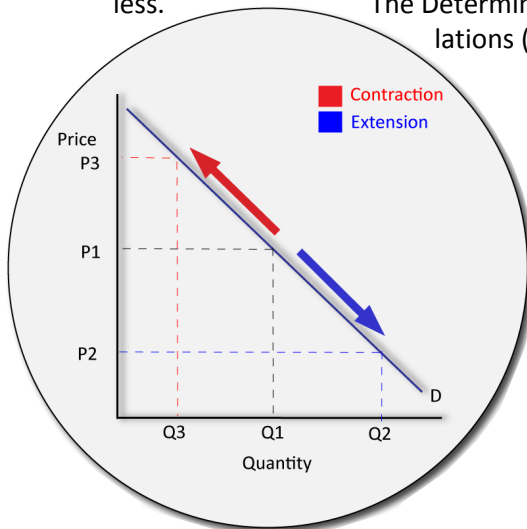


# Unit 1—Microeconomics

- **Market**—a place where goods and services are bought and sold. It can be visible (as the fish market below) or invisible (like the stock market)



- **Demand**—measures the relationship between price and quantity demanded. Tells us that the two have an inverse representation.
- **Contractions in Demand**—show us when price rises, quantity demanded falls.
- **Extensions in Demand**—show us when price falls, quantity demanded rises.
- **Shifts in Demand**—are caused by the determinants of demand. This is when there has been no change in the price of the product, but our quantity demanded has increased or decreased nonetheless.  
The Determinants are: Changing Incomes, changing Income Tax, changing Populations (such as below), change in price of related goods, expectations



**Demand Linear Equations**—help us plot demand curves using an equation. They tell us the gradient and thus elasticity of the product. By changing either of the variables, the gradient of the line changes. The equation is:  $Q_d = a - Bp$ .

Finding P

It is calculated as below:  
If  $Q_d = 100 - 25p$   
 $0 = 100 - 25p$   
 $25p = 100$   
 $1p = 4$

Finding Qd

When  $Q_d$  is 0 then  $p$  is 4. We then go back to the equation  
If  $Q_d = 100 - 25p$   
 $Q_d = 100 - 0$   
When  $P$  is 0 then  $Q_d$  is 100. This can now be plotted



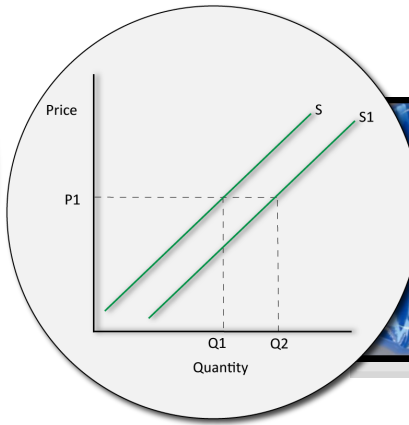
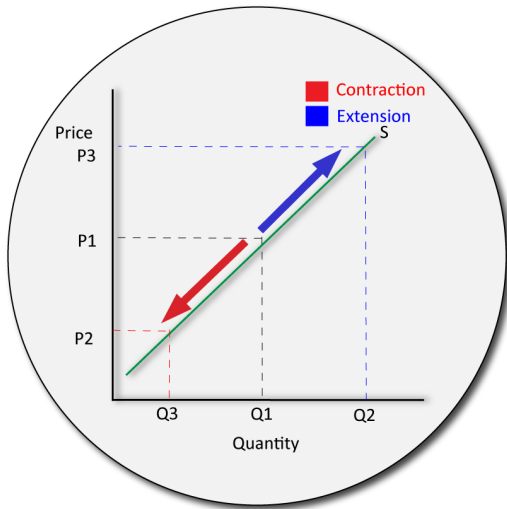
$$Q_d = a - Bp$$

RULE

When the **a** variable remains constant but the **B** variable changes, we see a **change in gradient/elasticity**  
When the **B** variable remains constant but the **a** variable changes, we see a **shift in demand**

# Unit 1—Microeconomics

- **Supply:** the amount of goods or services a firm is willing to produce at any given price. A positive relationship exists between price and quantity supplied.
- **Extensions in Supply:** when the price of a good increases, producers wish to sell more. We move along the supply curve upwards.
- **Contractions in Supply:** when the price of a good decreases, producers wish to sell less. We move along the supply curve, downwards.
- **Shifts in Supply**—these occur when the price does not change but our ability to produce more or less does change. Due to the determinants of supply—weather, price of other goods, supply shocks, expectations, number of firms, technological progress, changes in law, business taxes and subsidies.



**Supply Linear Equations**—We know that **price** and **quantity** have a positive relationship for supply. We can now also see how to plot this using a linear demand formula:  $Q_s = c + dP$ .  
First, draw the axis for a supply diagram.  
Then, look at your equation (example:  $Q_s = -30 + 20p$ )

Finding P

Let's assume we want to know **price (p)**

We need to rearrange the equation

$$Q_s = -30 + 20p$$

Let's assume  $Q_s = 0$ .

If that were true then we have the formula:  $0 = -30 + 20p$

But this is unbalanced. To balance it we move  $-30$  across, our equation becomes  $+30 = 20p$

To find P when  $Q_s$  is 0, we must therefore divide  $30/20 = 1.5$

Finding  $Q_s$

Once we know price we need to go back and find out  $Q_s$

$$Q_s = -30 + 20p$$

To do this, we go back to the original equation and set P at 0

$$Q_s = -30 + 0$$

$$Q_s = -30$$

So we know that:

When  $Q_s$  is 0 then  $P = 1.5$

When P is 0 then  $Q_s = -30$

So plot your curve!



$$Q_s = c + dP$$

RULE

When the **c** variable remains constant but the **d** variable changes, we see a **change in gradient/elasticity**.  
When the **d** variable remains constant but the **c** variable changes, we see a **shift in supply**.

# Unit 1—Microeconomics

## Exceptions to the Law of Demand

These goods have an upward sloping Demand Curve, which means that they have a directly positive relationship between price and quantity demanded

*As price increases, people want more of these goods!*

### 1. Veblen Goods—e.g. diamonds

*Invented by Thorstein Veblen—a classical economist  
The idea here is that there is a snob-value status. The more expensive something is, the more people want to buy it to show off their wealth. As price increases, so does demand*

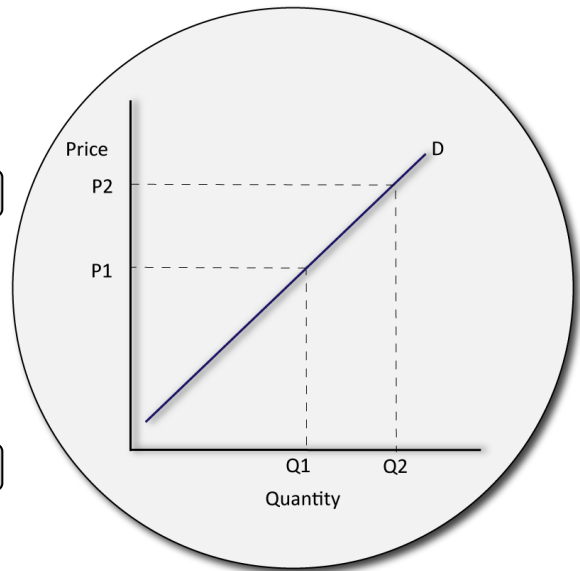
### 2. Giffen Goods

*Invented by Robert Giffen  
Only found amongst very poorest in society. The idea is that when prices of staple goods go up, poor people stop buying anything deemed luxury and spend all that extra money instead on buying the staple foods.*

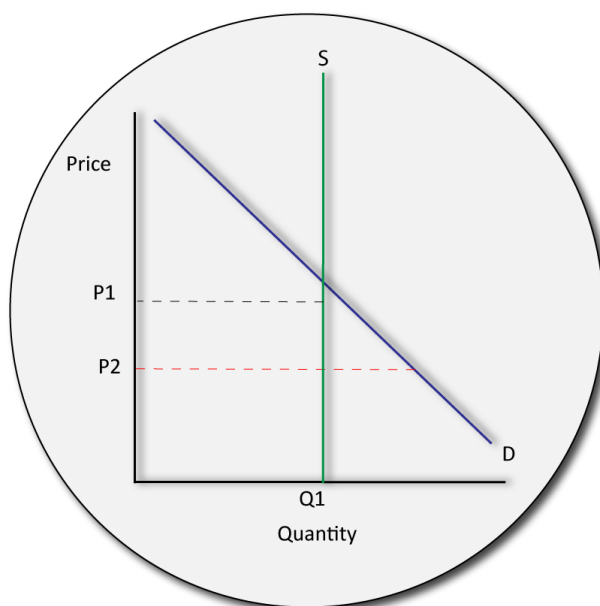
*Example: Bread costs \$1 and a chicken costs \$2. A farmer one loaf of bread and a chicken. His income is \$3 a day. Bread rises to \$2. The farmer stops buying the chicken, buys one loaf of bread but realizes he has \$1 left. He cannot afford the chicken so buys another loaf of bread instead.*

### 3. Role of Expectations (stocks and shares)

*If people think that the value of a company is going to rise, they will continue buying shares in it, even if its value is already rising. As price goes up, so too does quantity demanded.*



## Exceptions to the Law of Supply



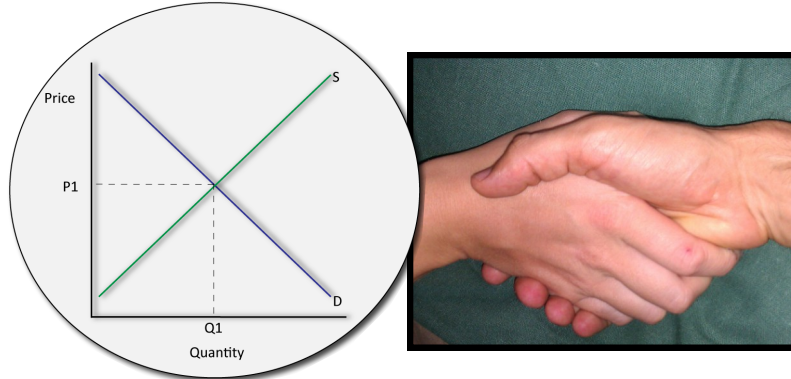
The following situations show that as price increases, quantity supplied remains constant. In both cases supply is fixed.

- 1) Fixed Supply owing to Limited Capacity  
*E.g. Stadiums*
- 2) Fixed Supply owing to Inability to produce more  
*E.g. Ancient Ming Vases*

In both cases, supply is fixed at a certain amount (Q1)  
In both cases, decreasing price will always cause excess demand (e.g. a popular concert...Q1-Q2)  
In Case 1 Supply can increase in the long run (e.g. build more seats)  
In Case 2 Supply cannot increase but can decrease (a Ming Vase gets smashed)

# Unit 1—Microeconomics

- **Equilibrium**—the price at which consumers are willing to buy and producers are willing to sell.

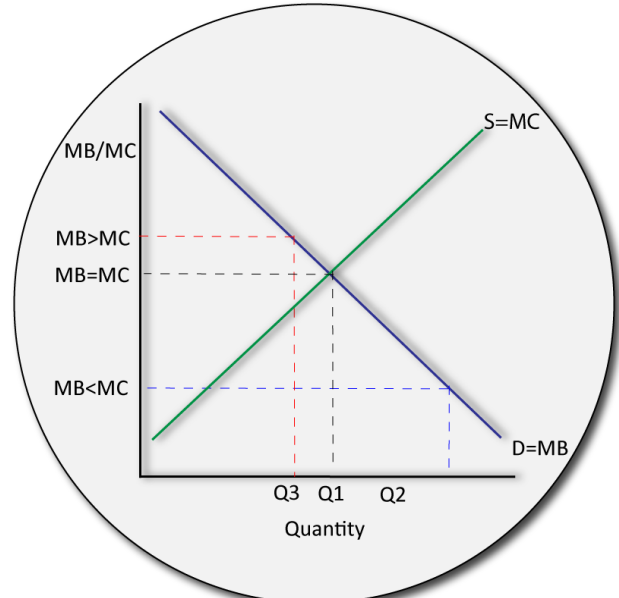
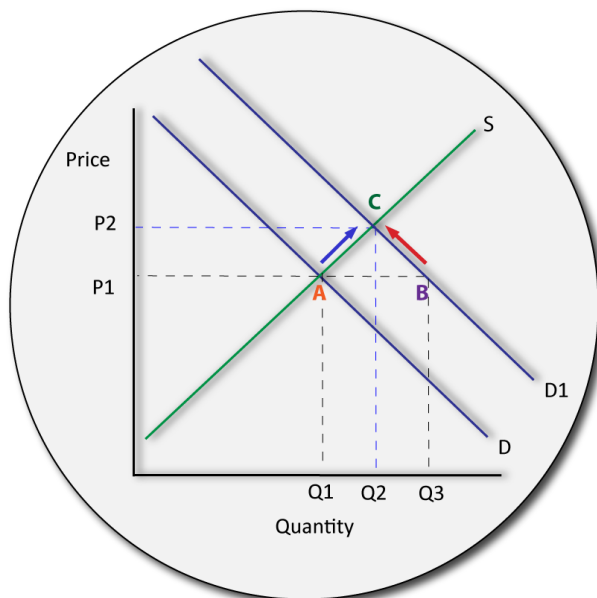


If price is above equilibrium, this is disequilibrium and we are in excess supply

If price is below equilibrium, this is disequilibrium and we are in excess demand

## The Price Signal in (very) brief

When demand or supply shifts we initially move into disequilibrium (B). We find ourselves in either excess demand or supply. Producers, noting the price is either too low or high, thus adjust them in order to correct this disequilibrium, causing an extension or contraction in demand. A new market price is reached (C).



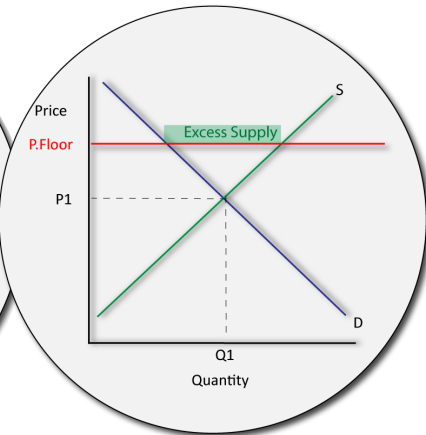
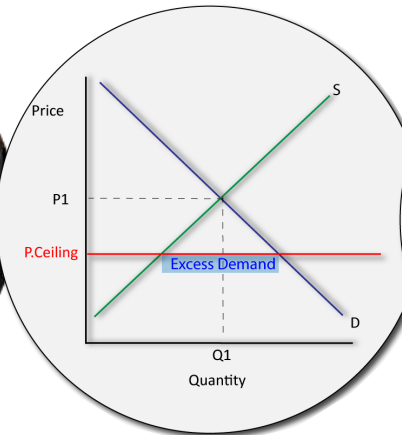
## Efficiency on a Demand and Supply Diagram

- **Consumer Surplus**—the satisfaction gained by not having to pay a price above equilibrium price
- **Producer Surplus**—the satisfaction gained by not having to sell at a price below equilibrium price
- **Productive Efficiency**—producing the optimum amount at the lowest cost with the fewest resources
- **Allocative Efficiency**—producing the combination and amount of goods that society requires
- **Economic Efficiency**—productive and allocative efficiency in all markets.
- **Marginal Benefit**—the satisfaction derived from consuming an extra good
- **Marginal Cost**—the cost to society of producing an extra good
- **If  $MC=MB$  we are**
  - Productively efficient (any point below this price and we could produce more, above and we are not producing at lowest possible cost as MC is great)
  - Maximizing consumer and producer surplus (and thus being allocatively efficient)
  - Economically Efficient (allocatively efficient across all markets)



# Unit 1—Microeconomics

- **Price Ceiling**—when price is not allowed to rise above a certain level. Constricting price ceilings always occur below equilibrium price.
- **Price Floors**—when price is not allowed to fall below a certain level. Constricting price floors always occur above equilibrium price.



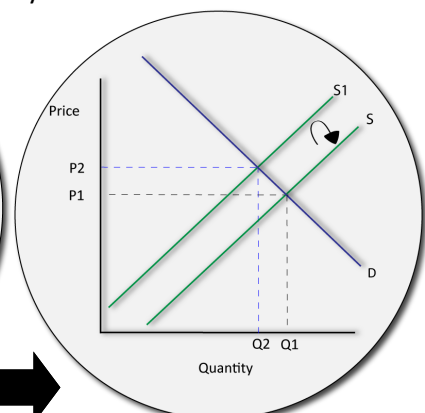
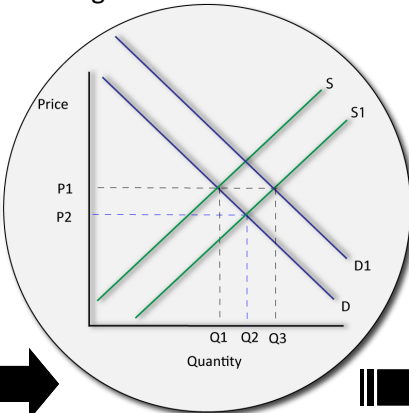
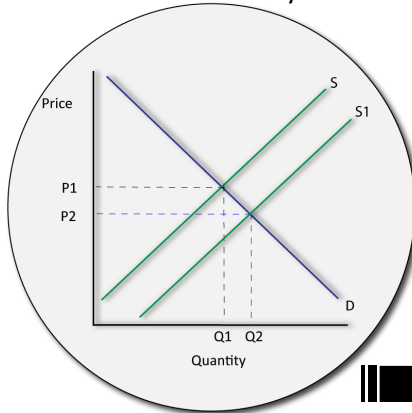
## Consequences of Price Ceilings and Price Floors

### Price Floors:

- Disequilibrium: excess supply
- Shift in supply outwards as more firms are attracted to producing the good
- Black markets as suppliers seek to make some profit on goods
- Waste—goods must be stored or kept; this is expensive and inefficient
- Encourages productive inefficiency; producers are guaranteed a high selling price
- Allocative inefficiency—combination of goods does not reflect demand

### Price Ceilings:

- Disequilibrium: excess demand
- Shift in supply inwards as firms move away from less profitable good
- Black markets as producers know consumers will pay more if offered it
- Shortages and non price rationing—not enough goods to go round, how to decide who gets what?
- Allocative inefficiency—combination of goods does not reflect society's wants



## Buffer Stock Schemes

- These are schemes by the government to reduce volatile prices for commodities. The idea is that when there is a good harvest (due to good weather etc, diagram 1), the government buys the extra supply, thus forcing demand out to meet equilibrium price (2). When there is a bad harvest, the government can then sell this extra supply (3), thus re-boosting supply to equilibrium price.

Problems: gluts, storage, shortages, encouraged inefficiency, proportional shifts

# Unit 1—Microeconomics

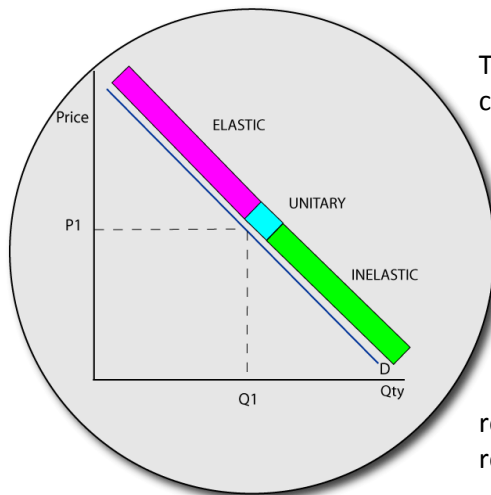
- **Price Elasticity of Demand**—measures the responsiveness between a change in price and the effect on quantity demanded. Measured using formula below.
- **Price Inelastic**—tells us that a great change in price results in a small change in quantity demanded. Has a PED of <1. Usually goods with low starting price or necessities.
- **Price Elastic**—tells us that a small change in price results in a large change in quantity demanded. Has a PED of >1. Usually luxuries or goods with many substitutes

$$PED = \frac{\% \Delta QD}{\% \Delta P}$$

$$\% \text{Change in } QD = \frac{\text{Change in Quantity} \times 100}{\text{Original Quantity}}$$

$$\% \text{Change in } P = \frac{\text{Change in Price} \times 100}{\text{Original Price}}$$

- **Varying Price Elasticity of Demand**—all demand curves show us varying degrees of elasticity at different price ranges. We cannot use a single demand diagram to show us elasticity in general; it must be at a specific price. Only if demand curves share a price range and intersect each other can they be compared—and even then, only at that price.



The diagram shows us that the upper portion of any demand curve is elastic. If prices are increased in this section, then quantity will fall at a greater rate. Revenue (pxq) will thus fall greatly. Prices must therefore be lowered, as quantity demanded will increase by a greater amount. This must continue until we are at the unitary elastic price. At this price, a change in price has the exact same effect on quantity, so revenue won't change.

Similarly, if in the bottom portion of our demand curve, we must increase price until its unitary elastic section, as this will result in a greater increase in quantity demanded, and thus revenue is greater.

## Total Revenue and Price Elasticity of Demand

The higher the price (in relation to another price) the more elastic a good becomes, but any Demand curve has 3 sections (elastic, unitary, inelastic). Producers should produce at unitary elastic price to maximize revenue.

## Reasons for knowing Price Elasticity of Demand

**Revenue Maximization**—Revenue =  $P \times Q$ .  
Producing at Unitary  
Price Elasticity = greatest total revenue.

**Price Discrimination**—different people have different PED's for certain products; we can maximize revenue totally by targeting different prices at different people.

**Tax maximization**—To maximize taxation revenue—taxing inelastic goods produces higher government revenue

**Commodity Agreements**—To ensure fair prices for commodity producers—decreasing supply = increasing TR for commodity growers—this is illogical and must be corrected

# Unit 1—Microeconomics

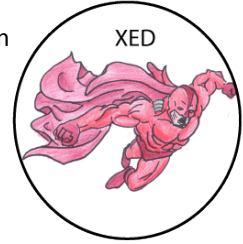
## XED/CED (Cross Elasticity of Demand)

**Theory:** measures the relationship between a change in price for one product and the change in demand for another

**Example:** Coke and Pepsi, Cars and Oil

**Effect:** The greater the number, the more the good is substitutional. If the number is negative, they are complements

**Equation:**  $CED = \frac{\% \text{ Change of Price for Good X}}{\% \text{ Change in Demand for Good Y}}$



## YED (Income Elasticity of Demand)

**Theory:** measures the relationship between a change in income and the change in demand for a product

**Example:** Changing incomes

**Effect:** The greater the result, the greater the shift outwards. If it is negative this indicates inward shift (and thus inferior goods)

**Equation:**  $YED = \frac{\% \text{ Change of Income}}{\% \text{ Change in Demand for Good X}}$

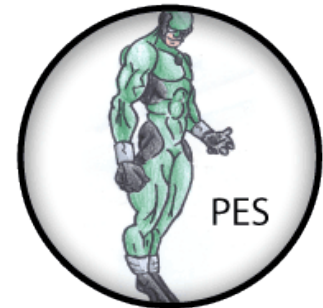
## PES (Price Elasticity of Supply)

**Theory:** measures the relationship between a change in price and the change in supply for a product

**Example:** Growing wheat.

**Effect:** The greater the result the more elastic supply is. If the number is <1 it is inelastic, >1 elastic.

**Equation:**  $PES = \frac{\% \text{ Change in Price for Good X}}{\% \text{ Change in Supply for Good X}}$



## Tax and Elasticities

Governments set tax. By knowing the elasticity of the product they are taxing they can see the change in revenue they may get from the said tax. First it is important to note there are two types of tax:

- A) Ad Valorem Tax— incremental increase in percentage terms
- B) Flat Rate Tax—a set amount

Taxes on a PED elastic product = more producer burden (green area fig.1)

Taxes on a PED inelastic product = more consumer burden (blue area fig.2)

Tax on a PES elastic product = greater consumer burden (blue area fig.3)

Tax on a PES inelastic product = greater producer burden (green area fig.4)

**Note:** blue+green area indicates total tax

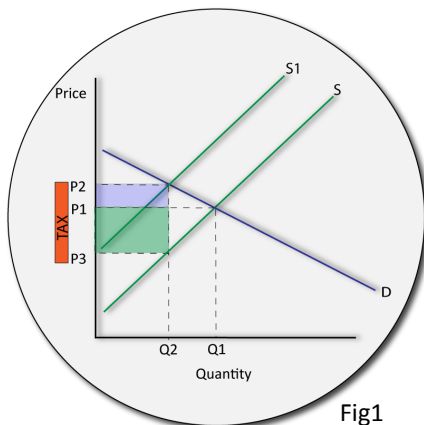


Fig1

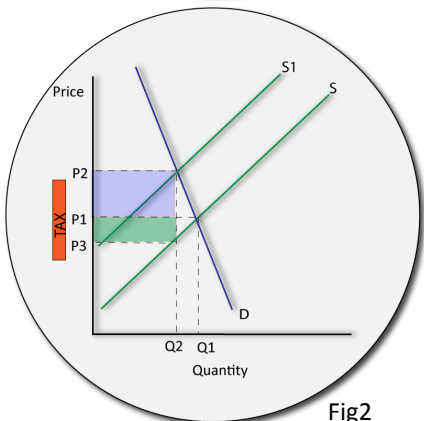


Fig2

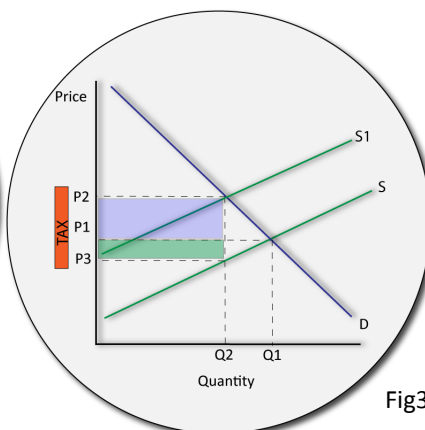


Fig3

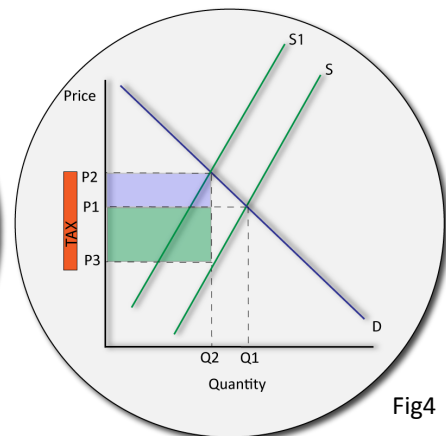


Fig4



# Unit 1—Microeconomics

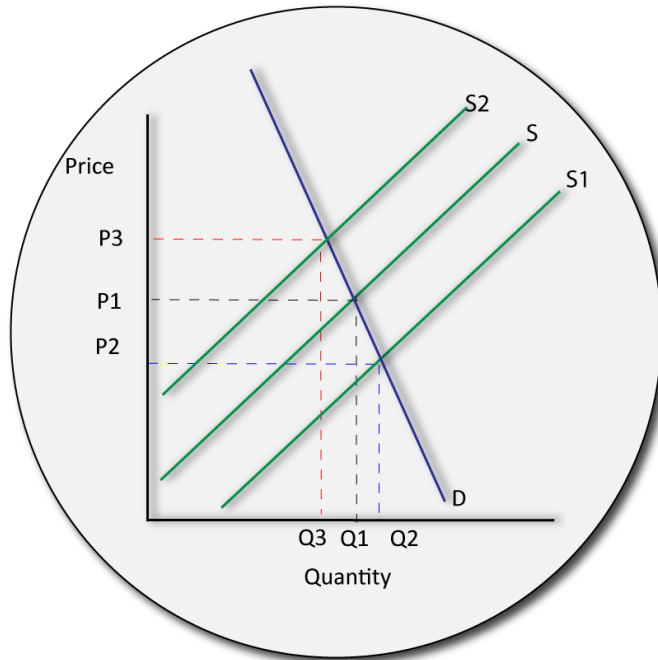
## PED and Revenue

- Revenue is the monetary amount you receive for each good, multiplied by the number you sell ( $P \times Q$ )

### In Diagram 1:

If demand is inelastic and supply decreases we see that revenue increases (red area larger than black area)

If demand is inelastic and supply increases we see that revenue falls (blue area smaller than black area)



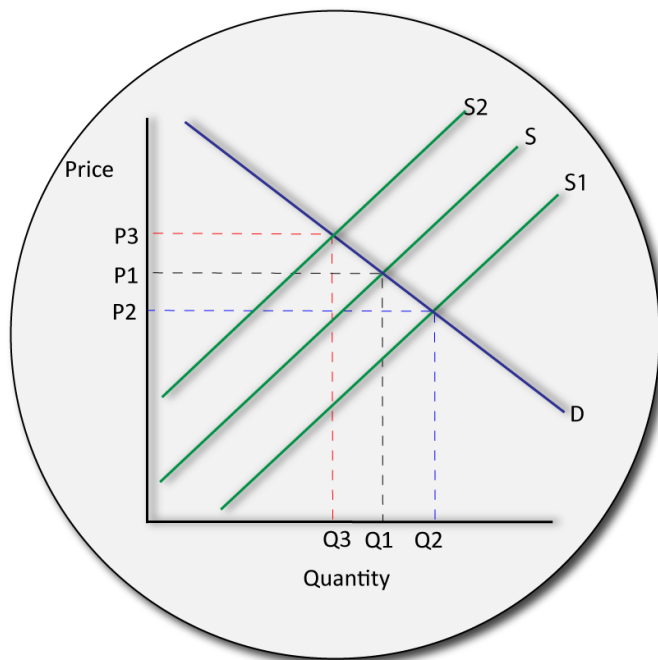
### In Diagram 2

If demand is elastic and supply decreases we see that revenue falls (red area on Diagram 2 is smaller than black area)

If demand is elastic and supply increases we see that revenue increases (blue area bigger than black area)

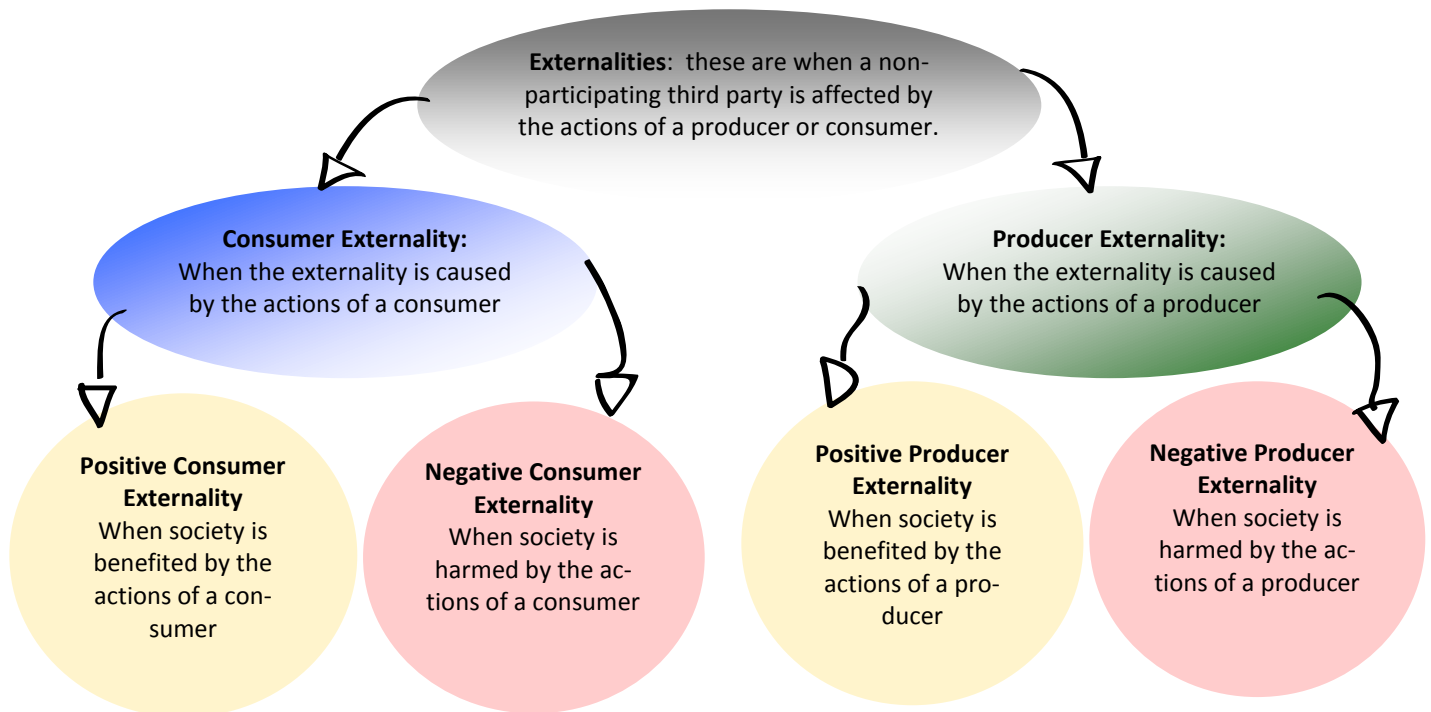
### Observations

- What we therefore learn is that if you have an inelastic product it's better for you to restrict supply, as your revenue will increase and vice-versa for an elastic product
- As commodities are inelastic, we need to somehow encourage them to produce more through price control schemes such as buffer stocks.
- As commodities face volatile weather conditions, we also see that commodity-producers face fluctuating incomes, which may force them out of the industry. They need to be encouraged to stay in, and supply more so that prices are low and commodities are abundant.



# Unit 1—Microeconomics

**Market Failure:** This occurs when, by itself, a market does not achieve allocative efficiency. This is owing to externalities which cause a misallocation of resources. We must therefore intervene.

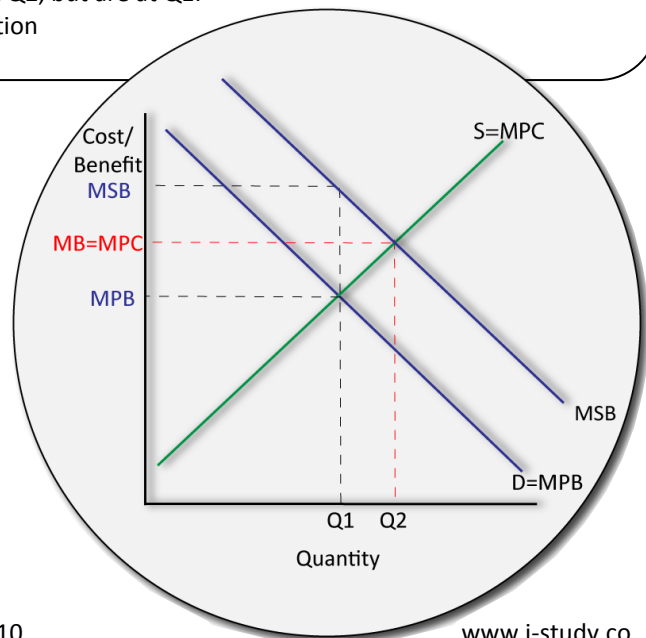


## Positive Consumption Externalities.

**Example:** Buying a hydro-electric car

**Explanation:** When consumers buy a hydro electric car, the benefit to society is greater than the benefit to the individual (in this case, society benefits from all the clean air). There is a separation between Private Benefit and Social Benefit. If a good benefits society more than the individual, the individual will not be inclined to buy as much of it as society likes, as his personal satisfaction is not great enough. In other words, MPB is lower than MSC. We need to encourage more people to buy these products. There is an under-allocation of resources so we are not being allocatively efficient. We should be at Q2, but are at Q1.

**Methods to address this:** Advertising, subsidies, legislation



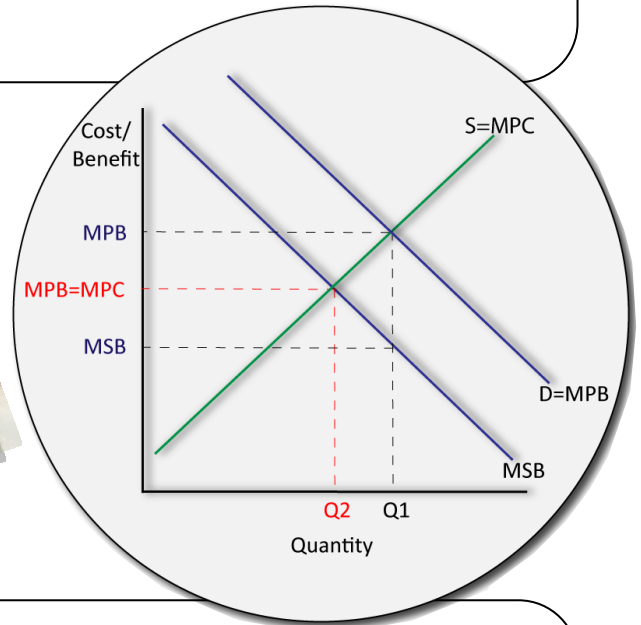
# Unit 1—Microeconomics

## Negative Consumption Externalities.

**Example:** Smoking a cigarette, alcohol

**Explanation:** When consumers buy a cigarette, the benefit to society is lower than the benefit to the individual (in this case, society is harmed by all the second-hand smoke). There is a separation between Private Benefit and Social Benefit. If a good benefits the individual more than society, the individual's satisfaction is coming at the cost to society. In other words, MPB is lower than MSC. We need to encourage less people to buy these products. There is an over-allocation of resources so we are not being allocatively efficient. We should be at Q2, but are at Q1.

**Methods to address this:** Advertising, taxation, legislation

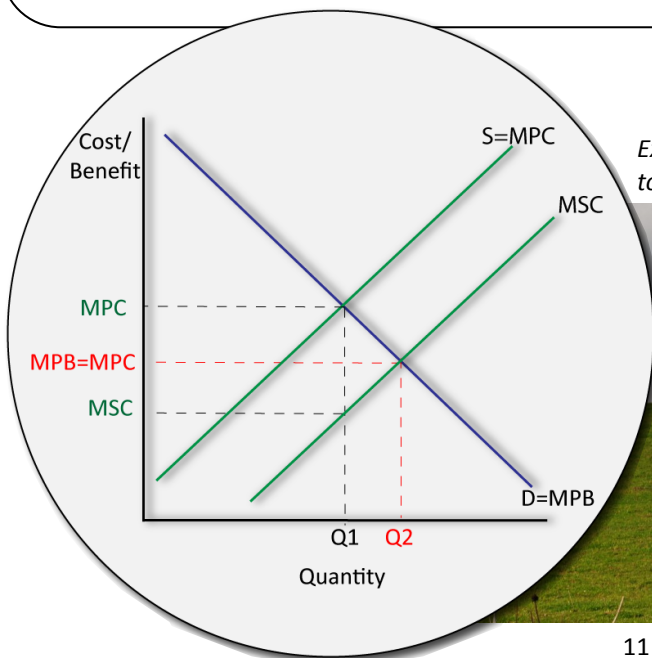


## Positive Production Externalities.

**Example:** Research and development of drugs.

**Explanation:** When producers pay millions of dollars to discover a new way of doing something, then all of society benefits greatly. However, the firm itself paid a high cost (millions of dollars) for the research. If everyone gets more benefit from the research than the firm itself, it is unlikely to continue doing such research. There is a separation between the cost to the individual firm, and the cost to society. We need to somehow encourage the firm to continue producing their goods as society wants Q2 but we are only at Q1. There is an under-allocation of resources so we are not allocatively efficient.

**Methods to address this:** Subsidies (increases  $S=MPC$  so that  $S=MPC=MSC$ )



Examples of the above can include R&D or cutting pollution to make a greener world





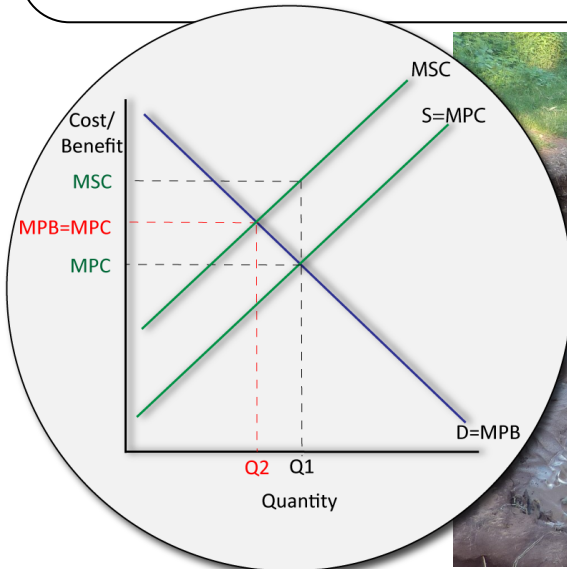
# Unit 1—Microeconomics

## Negative Production Externalities.

**Example:** Pollution.

**Explanation:** When a firm pollutes, the cost to society (in the form of all the healthcare costs) is greater than the private cost to the firm. The firm does not care about the pollution, but everyone else suffers. Society wants us to produce much less ( $Q_2$ ) but we are over-producing this good ( $Q_1$ ). There is a separation between MPC and MSC. We need to find a way to correct this.

**Methods to address this:** Pigovian Taxes, Trading Permits, Laws, Property Rights



## General Rules to Remember:

### Production Externalities

- Refer to supply
- Refer to costs.

### Consumption Externalities

- Refers to demand
- Refer to benefits

### Negative Externalities

- Cause an over-production of goods

### Positive Externalities

- Cause an under-production of goods

The following goods experience market failure:

**Merit Goods**—these are goods that are seen as desirable for a country. They have positive externalities. They are underallocated by the market as a result of their positive externalities. E.g. healthcare, education. Governments must step in, in order to further provide these goods (through tax reduction, subsidies, laws or advertising)

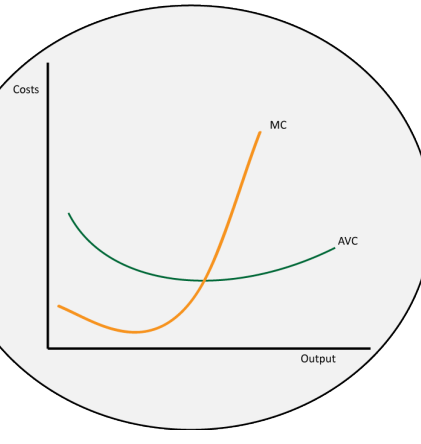
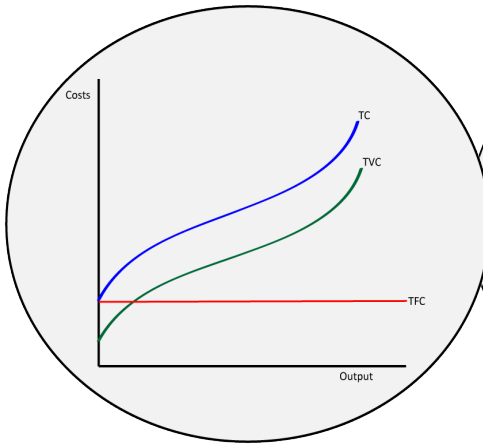
**Demerit Goods**—these are goods that are seen as undesirable for a country. They have negative externalities. They are overallocated by the market as a result of their negative externalities. E.g. alcohol, cigarettes. Governments must step in, in order to reduce provision of these goods (through tax increases, laws or advertising)

**Public Goods**—these are goods that are non-rivalrous (can be used by more than one person at once) and non-excludable (no matter the price, it doesn't stop people from using them). They result in the free-rider problem and result in little or no allocation by the market as a result. E.g. Street-lighting. Government's must provide these.



Some examples of the above-mentioned goods: education, alcohol and road signs

# Unit 1—Microeconomics



**Total Cost**—Fixed costs plus variable costs (diagram 1)

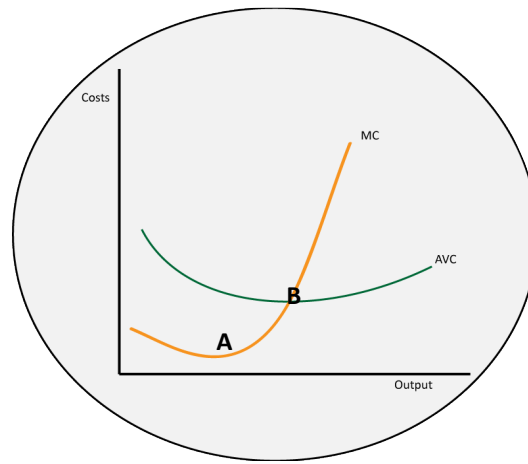
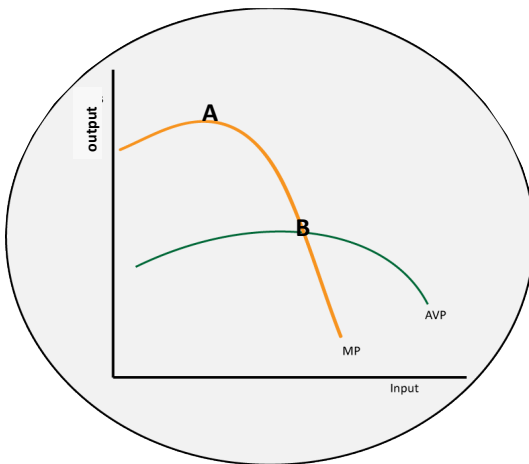
**Average Cost**—Total costs per unit produced (output) (known as **Average Variable Cost** in short run) It falls when we produce more but then rises as we continue to produce more. This is due to the Law of Diminishing Marginal Returns

- **Marginal Cost**—the change in cost over the change in output (marginal means 'the next')
- **Total Product**—the amount produced using your inputs
- **Average Product**—total product per input (inputs are generally looked on as labour)
- **Marginal Product**—the change in output divided by the change in input (if one worker adds 10 units, we divide 10 by 1). It's the amount the next worker brings.

## Marginal and Average Cost compared with Marginal and Average Product

These graphs have a relationship which shows us where best to produce. They can show us

- Which worker contributes most
- The maximum amount of workers to hire
- The Law of Diminishing Marginal Returns



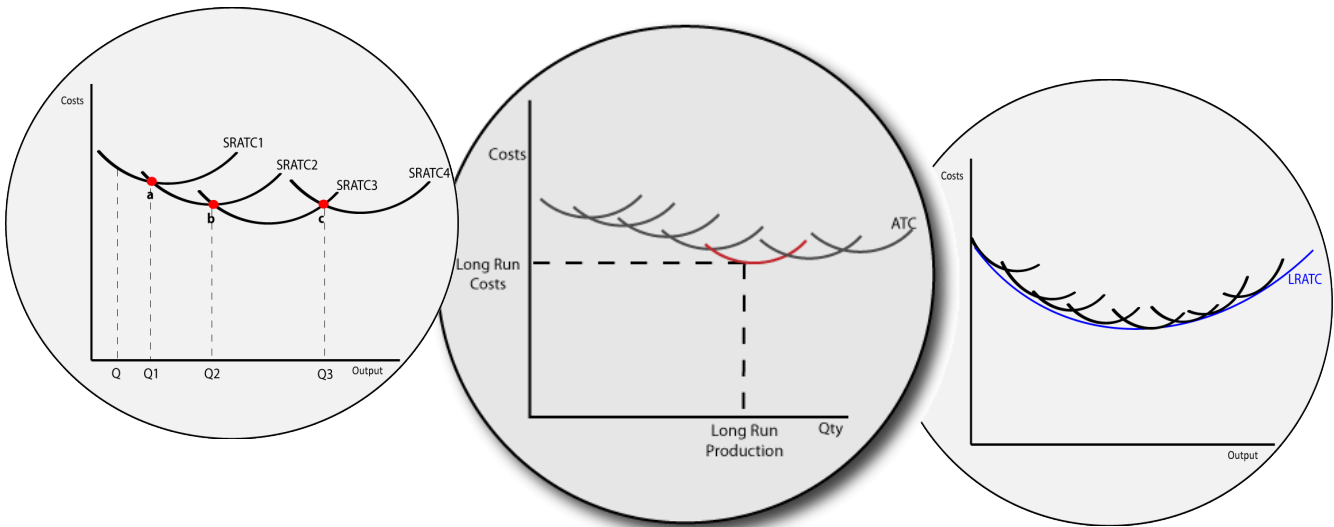
- At point A, this worker has brought the greatest change in output. If he has brought a large change in output by himself (lets say he produced 100 apples), then his marginal cost will be lowest (as marginal cost is calculated by change in cost divided by change in output).
- At point B, we have hired enough workers. If we add another worker, his cost will be higher than the average cost (thus causing the average to rise). Also, he will produce less than the average; thus making him ineffective (imagine, say, we had to pay his \$100 wage like everyone one else, but instead of producing the average 1 apple, he only produces half an apple!)
- From Point A onwards we experience the Law of Diminishing Marginal Returns. Every worker after Point A brings less and less output. This is because most inputs remain fixed, but only one is being increased (e.g. labour) and so if land (for example) doesn't increase but labour does, there will be overcrowding, making us less efficient.



# Unit 1—Microeconomics

## Basic Firm Concepts: The Long Run Economies of Scale

- Looking at the below diagram we know we want to produce at the bottom of our Short Run ATC (SRATC) to be productively efficient (SRATC1)
- After this point the curve slopes upwards due to **LofDMR**
- As we grow in size as a firm, we can reduce ATC (it thus shifts downwards) (SRATC2)
- We can do this continuously for a while because of **economies of scale**
- However, in the long run, continuing to produce more will lead to **diseconomies of scale**
- This forces ATC back upwards (SRATC4)
- We need to produce in the long run at the minimum ATC and at a point of **constant returns to scale**.



## Profit

**Total Revenue** = total income for all goods and services sold

**Average Revenue** = Total Revenue/inputs (workers)

**Marginal Revenue** = the extra revenue producing one extra unit brings.

**Profit** = total revenue—total costs.

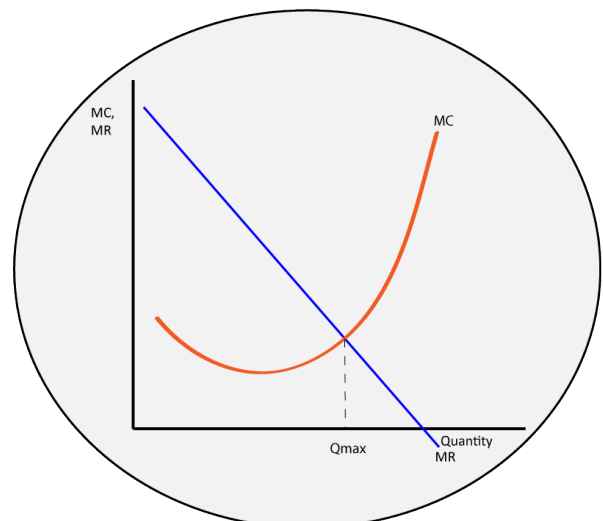
All firms aim to profit maximize. There are 2 ways to calculate profit

- 1) **TR—TC**
- 2) **MC=MR**

The first is self explanatory.

For the second, we need to understand Marginal Revenue can either be constant (if there is no control over price) or it can slope downwards (the higher the price, the less marginal revenue we get, as in diagram)

We would continue to produce all the way until  $MC=MR$ . Any quantity more and costs are higher than revenue. Any quantity less, and we have not benefited from all profit. Profit is greatest for the first unit, but we keep adding it up until  $MC=MR$ .



# Unit 1—Microeconomics

## Perfect Competition

No barriers to entry/exit

Price Takers

Numerous Firms

Homogenous Products

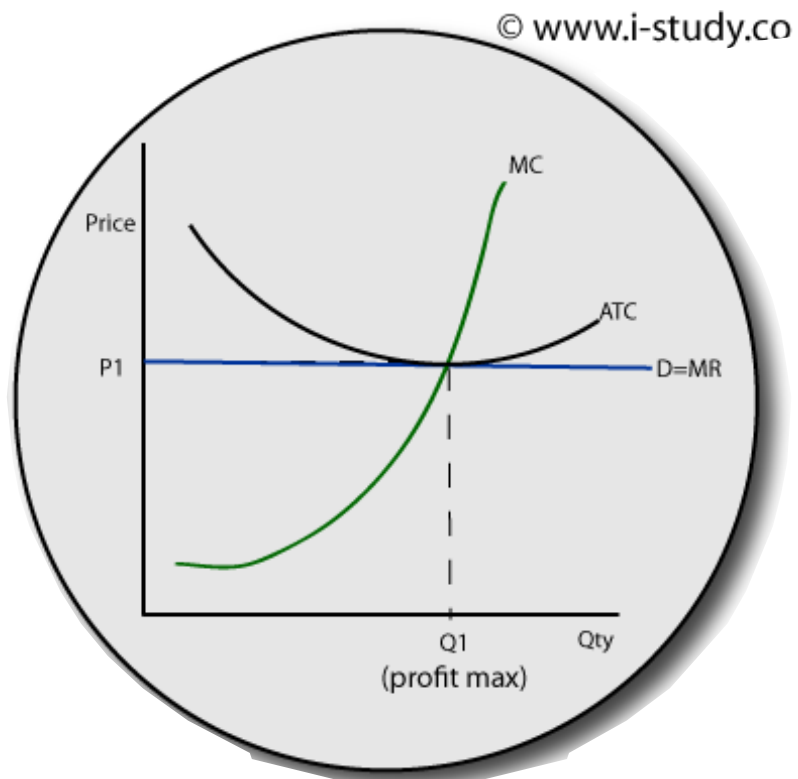
- In this industry, the key is that firms face no barriers to entry or exit
- This means competition is huge from the many firms that participate
- They sell the exact same product, so cannot compete on non-price competition.
- There is also perfect knowledge, so all consumers know the true value of the product
- Producers are therefore price-takers; they must set price at the lowest price in the industry or they will be forced out of the business.
- There is thus only one price and they must set this price.
- Demand is thus a straight line (no one demands a higher price and no one demands a lower price as they know this is impossible due to perfect knowledge). Demand *IS* price
- Demand is also Marginal Benefit (the satisfaction the consumer gets from buying the good)
- Demand is also Marginal Revenue (there is one price, that price is constant, so the revenue gained from the next good is always the same)
- Since they are profit maximizers, they still produce where  $MC=MR$
- At this point they are allocatively efficient (price=Marginal Cost) and productively efficient (since price is set at marginal cost and marginal cost intersects ATC at the lowest possible point)

### Advantages

- In this way only normal profit is made.
- Consumers get cheap prices. Consumer and Producer surplus is maximized
- Quantity is the maximum it possibly can be
- Efficiency is maximized

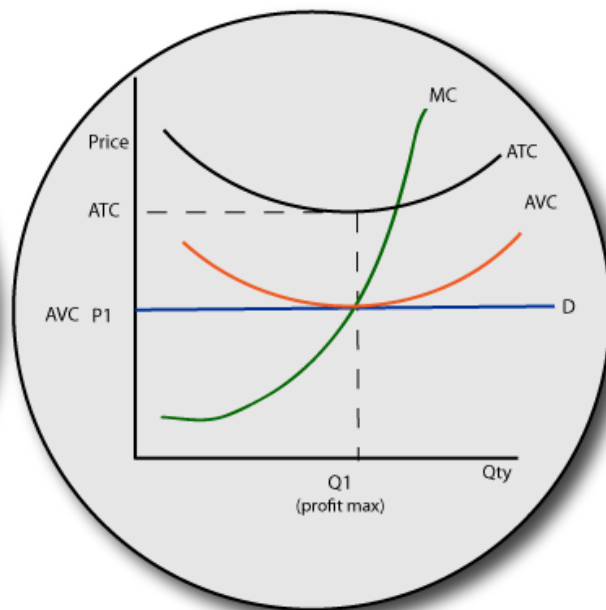
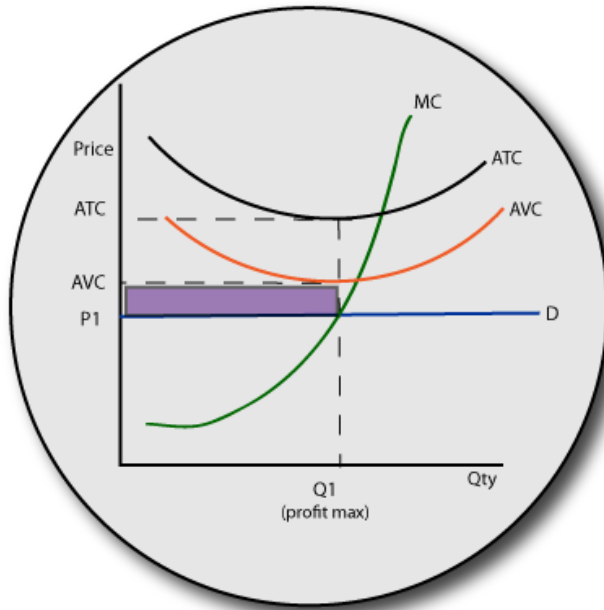
### Disadvantages

- No product differentiation
- No way to engage in research and development
- No way to benefit from economies of scale
- Lack of dynamic efficiency (less quality)



# Unit 1—Microeconomics

## Perfect Competition



### Shut-Down Price vs Short-Run loss

- Firms may operate at a loss in the short run so long as they know they can cover their variable costs e.g. wage.
- To know this we must show our AVC on the graph above.
- Diagram 1 shows a firm that cannot cover its variable cost and thus shuts down
- Diagram 2 shows a firm that can—just—cover its variable costs so carries on producing in the hope that they will either fall, or demand will rise
- The difference between ATC and AVC is obviously AFC. Neither firm is able to pay this in the example but Diagram 2's firm should be able to if Demand increases in the future.

# Unit 1—Microeconomics

## Monopolies

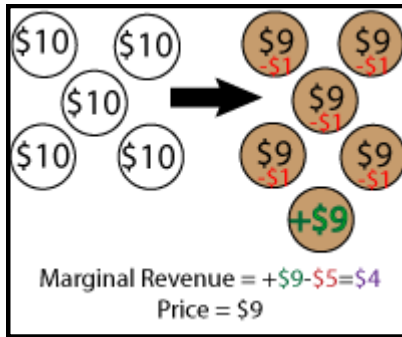
High Barriers to Entry/Exit

Price Setters

One Firm

One product

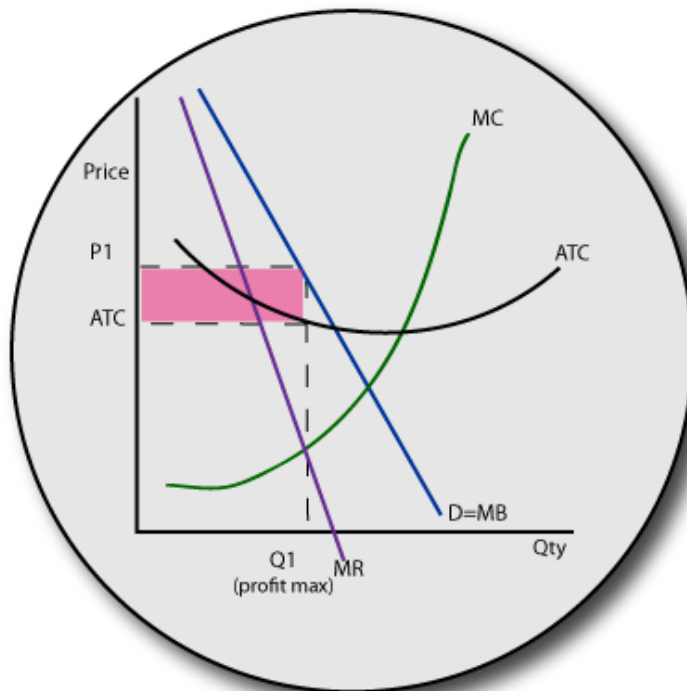
- The demand curve for a monopoly slopes downwards as it is a price setter and can choose whatever price it wants to set (as it is the only firm in the industry). Since price and quantity demanded have a negative correlation, the demand curve slopes down.
- The firm sets price where  $MC=MR$  to profit maximize
- At this level of quantity, people are willing to pay more than the true value of the product because:**



MR and Demand are separate as Demand reflects the price consumers are willing to pay for all the products, whereas MR represents the revenue from each unit. Demand slopes downwards as monopolies are price setters so prices change. For example, imagine there were 5 units selling for \$10 and this changed to 6 units selling for \$9. Our marginal revenue is the gain we made for selling that sixth unit (+\$9) as well as the loss we made for having to sell the other 5 at this lower price (we lose \$1 on each unit, so overall loss is thus \$5). When combined this is seen as  $+9-5$ ... so marginal revenue is +4. Clearly this is not the same as price.

**This is known as a separation between demand and marginal revenue**

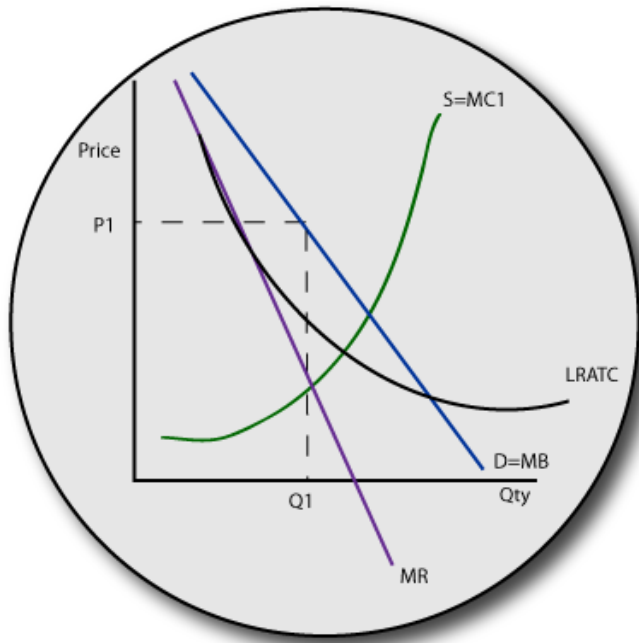
- As there is a separation between Demand and Marginal Revenue, the price is usually higher than average total costs (if we produce where  $MC=MR$ ) and so abnormal profit is made (pink section).



- Monopolies have inelastic demand curves as they are the sole provider of the good or service
- Their size makes them very powerful
- It also makes it harder to enter this industry—who can compete with Microsoft?

- Because the Demand curve slopes downwards, TR is not ever-increasing, unlike in perfect competition. We know that a demand curve has 3 elasticities along it. We know that Total Revenue is only maximized along the unitary section of a Demand curve. Therefore, as quantity increases TR increases (along the elastic section), is maximized (at the unitary point) and then falls (along the inelastic section).
- Monopolists do not produce where TR is maximized (the unitary section where  $MR=0$ ) but profit maximize

# Unit 1—Microeconomics



## The Natural Monopoly

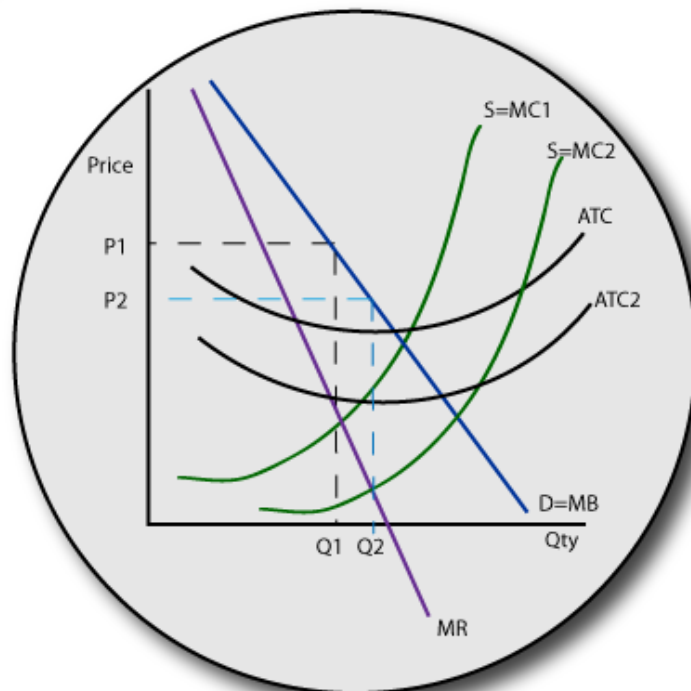
When one firm can satisfy the entire demand for a product and produce at a lower average total cost than more than one firm in the industry, this is a natural monopoly. LRATC keep falling mainly due to high set up costs (e.g. laying railway lines). Once they are set, demand is satisfied, and a new firm would face high LRATC's if it decided to join the market. Natural monopolies are thus barriers to entries in themselves.

### Other barriers to entry:

- 1) Copyright/Patents/Laws
- 2) Protectionism (tariffs, quotas, embargo)
- 3) Control of all resources
- 4) Predatory Pricing
- 5) Economies of Scale

## Showing economies of scale for a monopolist

- Economies of scale help to reduce average costs (and so marginal costs will also fall).
- We show this by shifting the MC and ATC curves downwards.
- When this happens, there is more quantity and lower prices ( $P_1-P_2$ ,  $Q_1-Q_2$ )
- This can only happen in the long run though.



Advantages	Disadvantages
Research and Development	Higher Prices than other markets
Economies of Scale	Lower Output than other markets
Potentially Improved Efficiency	Productive Inefficiency
Potentially better quality products (dynamic efficiency)	Allocative Inefficiency (+loss of consumer surplus)
	X-inefficiency
	Potential to practice price discrimination



# Unit 1—Microeconomics

## Monopolistic Competition

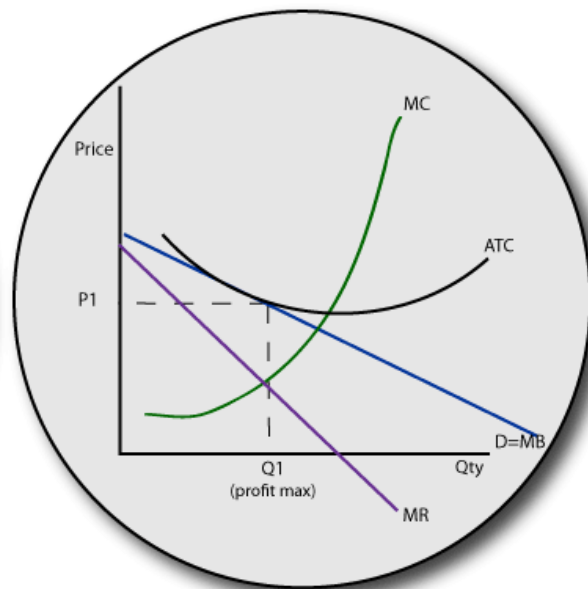
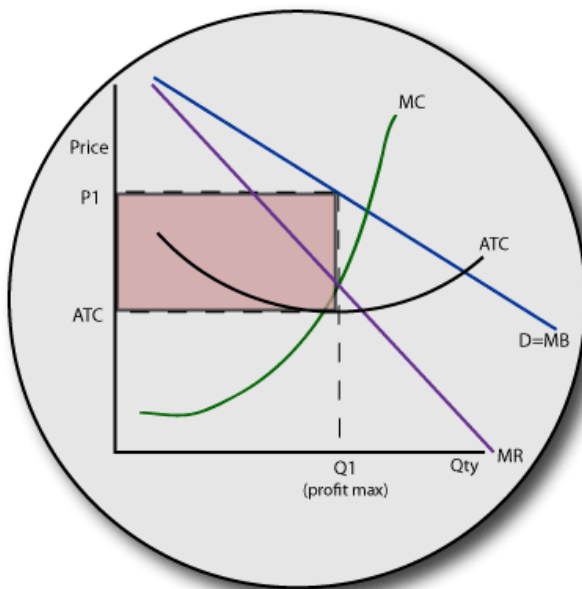
Low/Medium Barriers to Entry

Price/Non Price Competition

Numerous firms

Similar Products

- Firms in this industry create products that are very similar but a monopoly in their own certain way. For example shoes—Nike shoes are very similar to Adidas shoes but some people have a certain brand loyalty to Nike.
- Brand loyalty means people will continue to buy Nike's shoes even if the price increases.
- As a result, the monopolistic firms' demand curve slopes downwards; even if prices increase they still have customers. This is very elastic though as brand loyalty is weak
- Like all other firms, to profit maximize they produce where  $MC=MR$ . However, at this level of output ( $Q_1$ ), consumers are willing to pay a higher price than the marginal revenue received from that good. This means price is not Marginal Cost. We do not have allocative efficiency, and can gain abnormal profits in the short run (diagram 1 below)



- In the long run though, there are low barriers to entry.
- Therefore other firms enter the industry
- This has the effect that *some* consumers move over to the new firm
- Others stay with the old firm out of brand loyalty
- Therefore, demand for the old firm has fallen when a new firm enters the industry
- This causes D to shift downwards and profits to be lost.
- This keeps happening until normal profits are made in the long run (diagram 2 above)
- DO NOT get confused and say supply has increased. Supply of (for example) shoes **has** increased but

## Consequences of monopolistic competition

### Disadvantages

- 1) Lower output
- 2) Productive and allocative inefficiency (lack of consumer surplus + deadweight loss)

### Advantages

- 1) Ability to do research and development in short run and thus have better quality (dynamic efficiency)
- 2) Ability to achieve economies of scale in short run
- 3) Variety of products
- 4) Wider contributions to macroeconomy through advertising etc
- 5) Efficiency encouraged through low barriers to entry

# Unit 1—Microeconomics

## Oligopolies

High barriers to entry/exit

Price/Non Price Competition

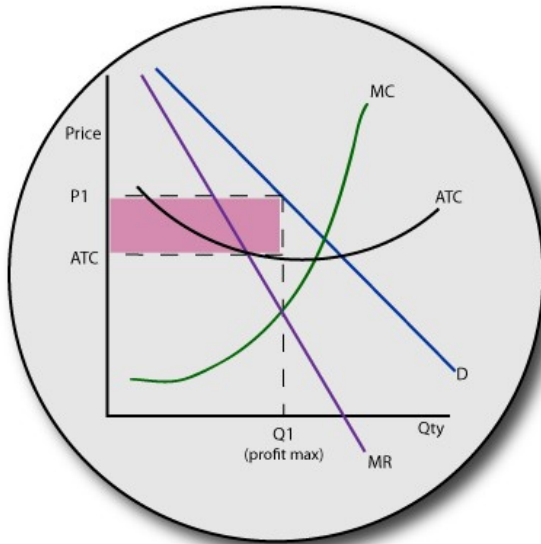
Few Firms (3)

Similar Products

**Oligopolies**—are firms that have a mutual interdependence to maintain similar prices and levels of output in their industry. They may be collusive (either formally—cartels— or informally) or non-collusive but the results are similar.

### Type 1: Cartels

- Are like monopolies that undertake non-price competition.
- Formally agree to collude (restrict output to keep prices high) in order to maximize profits. Their diagram is thus the same as a monopolies diagram. Results in abnormal profits and all benefits/drawbacks of a monopoly (see monopoly notes)



As we can see from the diagram, just like with monopolies, cartels produce where  $MC=MR$ . However this is easier in theory than in practice. Cartels are hard to form as:

- 1) It's hard to form agreeable price
- 2) Must have a dominant leader
- 3) Must avoid temptation to cheat
- 4) Have to have no brand loyalty

### Type 2: Informally Collusive

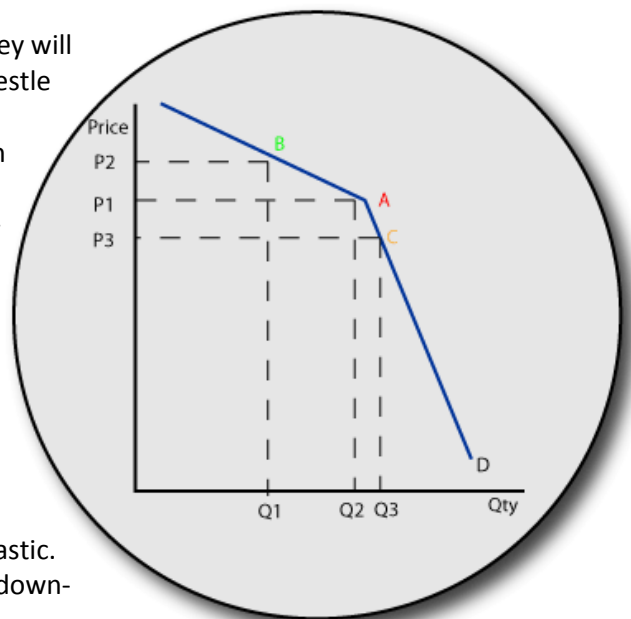
These are oligopolies that have not officially formed a cartel but have naturally been drawn together.

- a) Price Leadership
- b) Price Cutting and Predatory Pricing

### Type 3: Non-Collusive

Non-collusive do not get together to fix quantity or price. They have a kinked demand curve as strategic behaviour forms the basis of their decision making.

- If - for example - Kelloggs decided to raise their prices, they will first think 'what would Nestle and Post do?' Obviously, Nestle and Post would NOT raise prices, and so most consumers would switch over to their products, leaving Kelloggs with only the consumers that are loyal to the Kelloggs brand. Above Price A demand is thus elastic. They will not therefore raise prices.
- But if they decide to lower prices, they would have to again think 'what would Nestle and Post do?'. They would lower their prices too, and so most people would carry on buying the same product they did before.
- Even a large change in price would not be worthwhile as everyone would do it. Below Price A, demand is thus inelastic. They will not therefore drop prices. Prices remain 'sticky downwards'.



# Unit 1—Microeconomics

## Consequences of Oligopolies

(similar to consequences of monopoly, see before)

### Overall comparison of market structures

	Price	Profit	Output	P.Efficiency	A.Efficiency	C+S Surplus	Product
<b>Perfectly competitive</b>	low	normal	highest	yes	yes	maximized	same quality
<b>Monopoly</b>	highest	abnormal high	low	no	no	high producer, deadweight loss	depends on R&D
<b>Monopolistic</b>	varies	short-run abnormal	fairly low	no	no	deadweight loss	higher quality
<b>Oligopoly (non-collusive)</b>	high	abnormal high	low	no	no	deadweight loss	depends on type

## The Theory of Contestable Markets

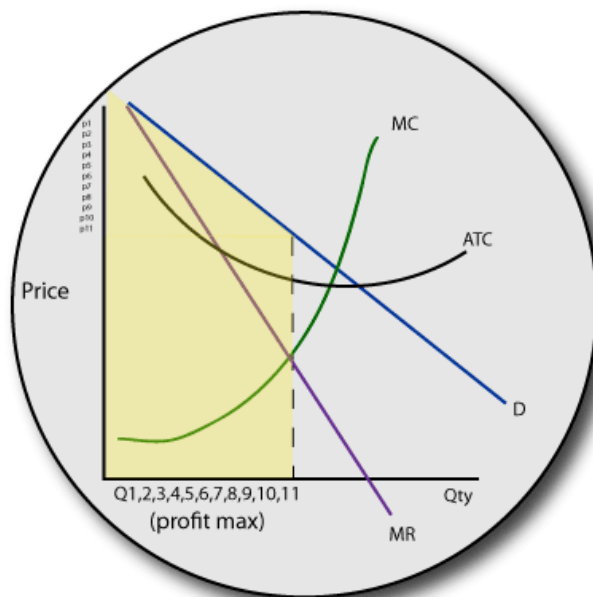
This argues that the market structure is irrelevant compared to *perceived* barriers to entry. It is the *threat* of competition that drives efficiency and if firms *think* they are under threat from firms entering the market because of low barriers to entry, then they are more likely to produce at a more allocative and productively efficient point.

## Price Discrimination

This is when firms attempt to further maximize profits by charging different prices for the same good to different people or groups of people.

### *Conditions for Price Discrimination*

Consumers have no perfect knowledge	Consumers have different PEDs	Consumers cannot sell-on the product	The firm doing it has market power
Consumers/Products can be easily separated			



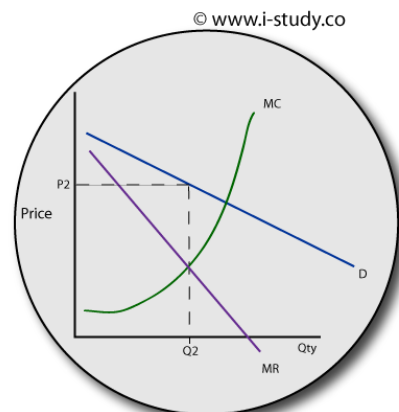
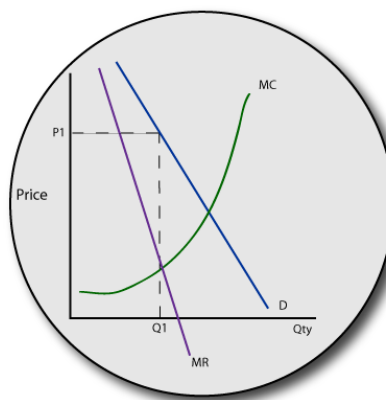
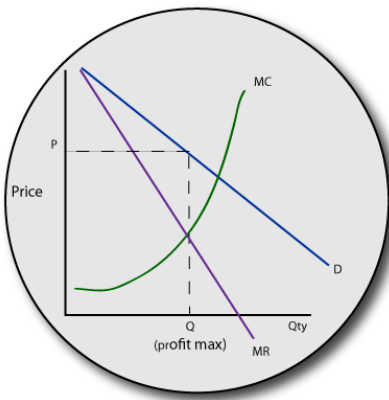
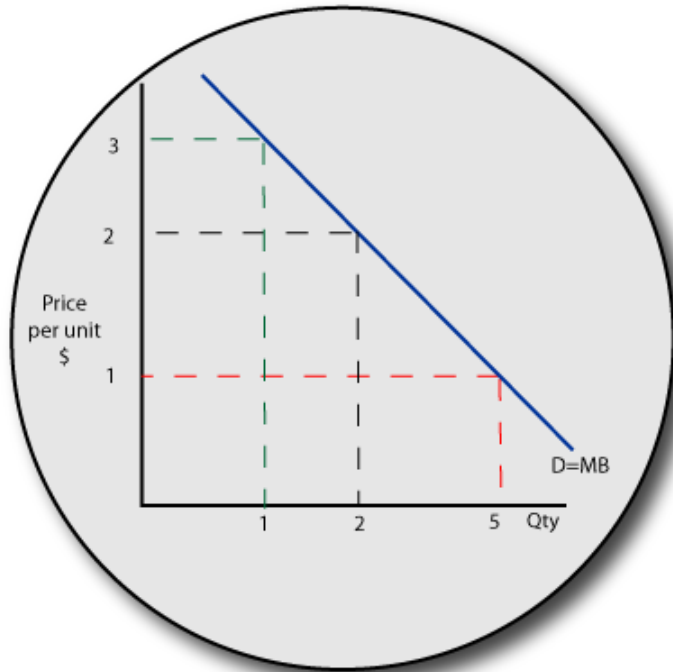
There are 3 types:

- 1) **Perfect Price Discrimination**—this refers to the ability to charge different prices to different consumers in regard to their individual PED for the product. Each person would pay what they were willing (see diagram to the left, where yellow section represents total revenue for the firm as each unit is sold for a different price)
- 2) **Second-Degree Price Discrimination**—is charging different prices depending on how much you buy. The more you buy, the cheaper—per unit—you get the good. This has the advantage of encouraging consumers to buy more than they usually would
- 3) **Third-Degree Price Discrimination**—is charging different prices for different social groups. For example cinema tickets are half price for children and 20% less for students.

# Unit 1—Microeconomics

**Right:** Second Degree Price Discrimination—as you buy more, you pay less per unit (its cheaper to buy 5 units at \$1 each but the firm then gets \$5 instead of the \$3 if you had just bought 1 unit)

**Below:** Third Degree Price Discrimination—different social groups pay different prices. The first diagram shows the whole market, whilst the second shows how revenue is maximized when the markets are split.



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## Price Discrimination: who gains?

### *Advantages:*

- Increased revenues for the firm—producers thus gain (producer surplus is maximized in 1st degree)
- Greater efficiency— with increased revenues firms can undertake research and development and thus achieve dynamic efficiency
- Wider accessibility to products—people who would not have bought the product at previous price, now can
- Potentially better allocative efficiency (the closer  $P$  is to  $MC$ , the more we are paying the true value for the good)

### *Disadvantages:*

- Loss of consumer surplus—Consumers may have to pay a higher price than previous
- Abnormal profits may be made and thus act as a barrier to entry
- Potentially worse allocative efficiency (the further  $P$  is from  $MC$ , the worse the allocative efficiency; we are not paying the true value for the good)

# Unit 1—Microeconomics

## Test-Yourself Questions

1. The Sri Lankan Government recently imposed price control schemes on rice, as it looked to make sure staple foods were affordable. Explain the economic consequences of this decision.
2. Evaluate the consequences of setting minimum wage too high.
3. The Law of Demand is distorted by both the richest, and poorest, sectors of society. Explain how this may be the case.
4. Explain how prices are allocated when there is a fall in supply in the market for butter.
5. Evaluate the benefits of a governmental ad valorem tax of 20% on cigarettes
6. 'Farmers face uncertain futures.' Using the concept of elasticities (of demand, supply and income) explain why this is so.
7. Evaluate the most effective measures to combat a negative production externality
8. Demerit, Merit and Public goods highlight the inadequacies of the market system. Explain why.
9. Explain—using diagrams—the relationship between marginal and average cost, and marginal and average product.
10. A firm in perfect competition is making a loss. Explain when they would be willing to stay in the industry, and when they would be forced to leave.
11. Explain how the determinants of monopolistic competition influence its price, output and profit.
12. Evaluate whether monopolies—whether natural or not— are beneficial to society.
13. Oligopolies base their decisions on other firms in the industry. Explain whether this is always true.
14. Compare and contrast the benefits and harm monopolies cause compare to firms in perfect competition.
15. Explain why perfect knowledge is not desirable for the producer, and how an absence of it may lead to greater profits.
16. Describe the conditions necessary for a firm to practice price discrimination
17. Using examples and diagrams, describe 2 forms of price discrimination.

## Your Notes

## Our Tips:

- 1) Draw the diagrams well—they tell most of the answers you need!
- 2) Revise, revise, revise. We know when you're blagging.
- 3) 'Evaluate' means *say something: have an argument*. Don't just list and explain.
- 4) Use the website: it goes into more depth. Use your books too!